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EXAMINER	
DAGLAWI, AMAR A	
ART UNIT	**PAPER NUMBER**
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/813,486	MOLOUDI, SHERVIN	
	Examiner	Art Unit	
	Amar Daglawi	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed on 09/26/2007 have been fully considered but they are not persuasive.

Applicant argues with respect to claim 1, that the combination of Sowadski (US 5,179,728) and Otto (US 4,812,849) fails to teach or suggest the limitation "generating a signal at a particular frequency, the signal being associated with a harmonic frequency signal disposed at a harmonic frequency". Examiner, respectfully disagrees with applicant based the teachings in cited previously in the first office action mailed on July 2, 2007. Sowadski teaches in col.3, lines 35-40, "the operation of the system 10 allows for the suppression of certain spurious products inherently generated pursuant to the action of the mixers 22a and 22b and further enables the level of energy radiated by the receiver due to the leakage of the local oscillator signal through the mixer to be substantially reduced". Therefore, since spurious products are generated by mixers 22a and 22b in superheterodyne receivers. These mixers are non-linear devices and harmonics of the input signals and of the local oscillator signal are generated during the mixing process. Thus, Sowadski teaches generating the signal (the intermediate signal) that is associated with a harmonics during the mixing process that results from the linear devices (See col.1, lines 1-50, col.3, lines 7-40).

Furthermore, with respect to the preamble in claim 1 "a method for reducing phase noise". Upon review of MPEP 2111.02, the preamble statement reciting purpose or intended use doesn't further limit the claim. The body of the claim fully and

intrinsically sets forth all the limitations of the claimed invention and the preamble merely states the purpose or intended use of the invention, rather than a distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is no significance to claim construction.

Moreover, with respect to the combination of Sowadski and Otto that applicant argues will result in generating the incorrect intermediate frequency by the mixers. Examiner believes that a bandpass filter (attenuator) doesn't serve to translate any frequencies. Therefore, incorrect intermediate frequencies will not be generated by the mixers. Examiner, therefore, believes that the combination is proper.

Independent claims 1, 21 and 32 remain rejected for the reason provided above and all dependent claims form these independent claims remain rejected for the same reason.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7, 14-20, 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849).

With respect to claim 1, Sowadski discloses a method for reducing phase noise (Abstract), comprising:

Generating a signal at a particular frequency, the signal being associated with a harmonic frequency signal disposed at a harmonic frequency (col.2, lines 1-36, col.3, lines 7-40, Fig.1).

However, doesn't expressly teach selectively attenuating frequency content disposed in a region around the harmonic frequency.

In the same field of endeavor Otto teaches band pass filter means are connected as close as feasible to the respective power dividers and serve to isolate the dividers at the region of the third harmonic of said fundamental reference frequency from effects on nonquadrature error arising (col.2, lines 33-48, col.4, lines 29-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Sowadski to incorporate a band pass filter as taught by Otto so as to suppress frequency in the region around third harmonic of the fundamental reference frequency.

With respect to claim 2, Sowadski as modified by Otto further teaches associating the signal with a second harmonic frequency signal disposed at a second harmonic frequency (col.1, lines 1-25, col.4, lines 10-45)

Selectively attenuating frequency content disposed in a second region around the second harmonic frequency (col.1, lines 1-25, col.2, lines 1-36, col.3, lines 7-40).

With respect to claim 3, Sowadski as modified by Otto further teaches applying at least one non-linear operation to the signal (Fig.1, 26) and transmitting the applied signal (col.3, lines 7-40).

With respect to claim 4, Sowadski as modified by Otto further teaches applying at least one non-linear operation to the signal comprises dividing the signal (Fig.1, 26, col.3, lines 7-40).

With respect to claim 5, Sowadski as modified by Otto further teaches applying at least one non-linear operation to the signal comprises mixing the signal with a reference signal (Fig.1, 22a, 34a).

With respect to claim 6, Sowadski as modified by Otto further teaches applying at least one non-linear operation to the signal comprises amplifying the signal (Fig.1, 22a, 34a).

With respect to claim 7, Sowadski as modified by Otto further teaches the signal is generated by at least one of a fixed frequency oscillator, a voltage controlled oscillator, and a current controlled oscillator (Fig.1, 24)

With respect to claim 14, Sowadski as modified by Otto further teaches the signal comprises a differential signal (col.3, lines 1-40).

With respect to claim 15, Sowadski as modified by Otto further teaches the signal comprises a quadrature signal (col.3, lines 40-67).

With respect to claim 16, Sowadski as modified by Otto further teaches the selective attenuating comprises canceling frequency content disposed in the region around the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

With respect to claim 17, Sowadski as modified by Otto further teaches the canceling frequency content disposed in the region around the harmonic frequency comprises canceling frequency content disposed only at the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

With respect to claim 18, Sowadski as modified by Otto further teaches the selective attenuating comprises notching frequency content disposed in the region around the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

With respect to claim 19, Sowadski as modified by Otto further teaches the notching frequency content comprises notching frequency content disposed only at the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

With respect to claim 20, Sowadski as modified by Otto further teaches the selective attenuating comprises band stopping frequency content disposed in the region around the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

With respect to claim 21, Sowadski discloses a circuit for reducing phase noise (Fig.1, 10), comprising:

A signal generator that generates a signal at a particular frequency, the signal being associated with a harmonic frequency signal disposed at a harmonic frequency (Fig.1, 24, col.2, lines 1-36, col.3, lines 7-40).

However, doesn't expressly teach selectively teach an attenuating circuit that selectively attenuates frequency content disposed in a region around the harmonic frequency.

In the same field of endeavor Otto teaches band pass filter means are connected as close as feasible to the respective power dividers and serve to isolate the dividers at the region of the third harmonic of said fundamental reference frequency from effects on nonquadrature error arising (col.2, lines 33-48, col.4, lines 29-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Sowadski to incorporate a band pass filter as taught by Otto so as to suppress frequency in the region around third harmonic of the fundamental reference frequency.

With respect to claim 24, Sowadski as modified by Otto further teaches a non-linear operation circuit that applies at least one non-linear operation to the signal to obtain an outgoing signal and a transmitting circuit for transmitting the outgoing signal (Fig.1, 26, col.3, lines 7-40).

With respect to claim 25, Sowadski as modified by Otto further teaches the transmitting circuit comprises an antenna (Fig.1).

With respect to claim 26, Sowadski as modified by Otto further teaches the non-linear operation circuit comprises a divider that divides the signal (Fig.1, 26, col.3, lines 7-40).

With respect to claim 27, Sowadski as modified by Otto further teaches applying at least one non-linear operation to the signal comprises mixing the signal with a reference signal (Fig.1, 22a, 34a).

With respect to claim 28, Sowadski as modified by Otto further teaches the non-linear operation circuit comprises an amplifier that amplifies the signal (Fig.1, 22 a, 34 a).

With respect to claim 29, Sowadski as modified by Otto further teaches the signal generator comprises at least one of a fixed frequency oscillator, a voltage controlled oscillator, and a current controlled oscillator (Fig.1, 24).

Claims 8-10, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849) as applied to claims 1 and 21 above and further in view of Boesch et al (US 6,298, 244 B1).

With respect to claims 8-10, 30-31, Sowadski as modified by Otto teaches all the limitations of claims 1 and 21 above but fail to teach frequency content is selectively attenuated by at least one attenuating circuit comprises at least one of an integrated component and a discrete component and wherein at least one attenuating circuit comprises at least one of harmonic trap.

In the same field of endeavor Boesch teaches in Fig.4 and Fig.5 a harmonic trap coupled to the input of diplex matching circuit to reduce harmonic content of signals outputs by the diplex matching circuit. The harmonic trap further consists of an inductor and capacitor grounded (Fig.4, Fig.5, col.7, lines 9-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Sowadski in view of Otto with the harmonic trap as further taught by Boesch so as to attenuate the frequency components of the oscillator.

Claims 11-13 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849) as applied to claims 1 and 21 above, and further in view of Cairns (US 5,794,131).

With respect to claims 11-13 and 30-31, Sowadski in view of Otto teaches all the limitations of claims 1 and 21 except for buffering the signal prior to attenuating the frequency content by a buffer.

In related art Cairns teaches reducing or eliminating radio transmitter mixer spurious outputs and teaches the output of the voltage controlled oscillator is applied to an input of a mixer which is buffered or limited by amplifier and low pass filter (col.4, lines 1-25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Sowadski in view of Otto with a buffer

amplifier 118 as taught by Cairns so as to attenuate frequency harmonic generates by the oscillator.

Claims 32-35, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849).

With respect to claim 32, a signal generator that generates a signal at a particular frequency, the signal being associated with a harmonic frequency signal disposed at a harmonic frequency (Fig.1, 24, col.2, lines 1-36, col.3, lines 7-40).

However, doesn't expressly teach selectively teach a buffer that buffers the signal, that buffer adapted to selectively attenuate frequency content disposed in a region around the harmonic frequency.

In the same field of endeavor Otto teaches band pass filter (buffer) means are connected as close as feasible to the respective power dividers and serve to isolate the dividers at the region of the third harmonic of said fundamental reference frequency from effects on nonquadrature error arising (col.2, lines 33-48, col.4, lines 29-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Sowadski to incorporate a band pass filter (buffer) as taught by Otto so as to suppress frequency in the region around third harmonic of the fundamental reference frequency.

With respect to claim 33, Sowadski as modified by Otto further teaches the signal comprises a differential signal (col.3, lines 1-40).

With respect to claim 34, Sowadski as modified by Otto further teaches the signal comprises a quadrature signal (col.3, lines 40-67).

With respect to claim 35, Sowadski as modified by Otto further teaches the signal generator comprises a differential signal generator (Fig.1).

With respect to claim 39, Sowadski as modified by Otto further teaches the buffer is adapted to band stop the frequency content disposed in the region around the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50) [The band pass filter is the buffer that attenuates the frequency content].

With respect to claim 40, Sowadski as modified by Otto further teaches the buffer is adapted to notch the frequency content disposed only at approximately the harmonic frequency (col.2, lines 33-48, col.4, lines 29-50).

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849) as applied to claim 35 and further in view of Puechberty et al (US 6,026,287).

Sowadski in view of Otto teaches all the limitations of claim 35 except for the buffer comprises a differential pair of transistors, the differential pair of transistors being adapted to receive the signal.

In the same field of endeavor Puechnerty teaches a buffer stage comprises a first pair of field effect transistors (col.6, lines 31-51, Fig.3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Sowadski in view of Otto incorporate the buffer comprises differential transistors so as to attenuate the frequency content generated by the oscillator.

Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sowadski (US 5,179,728) in view of Otto (US 4,812,849) as applied to claim 32 above and further in view of Boesch et al (US 6,298, 244 B1).

With respect to claims 37 and 38, Sowadski as modified by Otto teaches all the limitations of claim 32 above but fail to the buffer comprises a harmonic trap the harmonic trap being adapted to attenuate the frequency content disposed in the region around the harmonic frequency and the harmonic trap is disposed across a differential output of the buffer.

In the same field of endeavor Boesch teaches in Fig.4 and Fig.5 a harmonic trap coupled to the input of diplex matching circuit to reduce harmonic content of signals outputs by the diplex matching circuit. The harmonic trap further consists of an inductor and capacitor grounded (Fig.4, Fig.5, col.7, lines 9-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Sowadski in view of Otto with the harmonic trap as further taught by Boesch so as to attenuate the frequency components of the oscillator.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amar Daglawi whose telephone number is 571-270-1221. The examiner can normally be reached on Monday- Friday (7:30 AM- 5:00 AM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana N. Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

12-07-07

LANA LE
PRIMARY EXAMINER

Amar Daglawi